G. MARCONI.
WIRELESS TELEGRAPH TRANSMITTER.
APPLICATION FILED APR. 30, 1914.

1,271,190.

Patented July 2, 1918.
3 SHEETS—SHEET 1.

Fig.1.

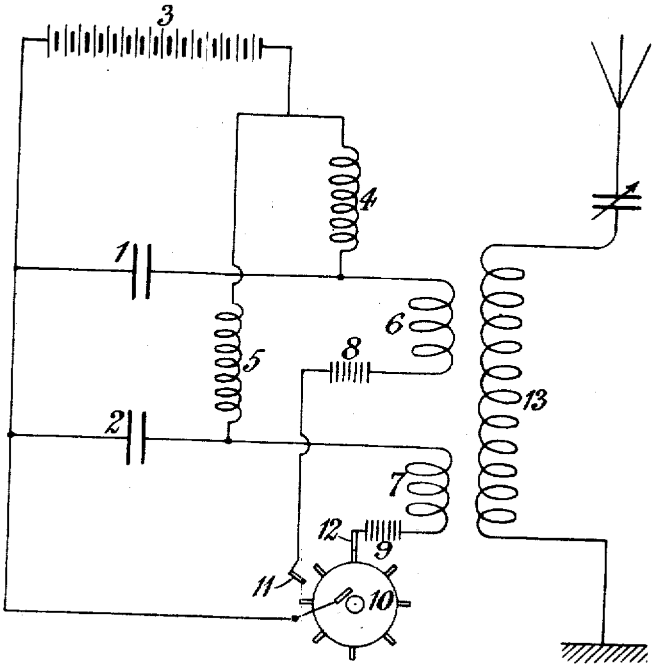

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Fig. 2.

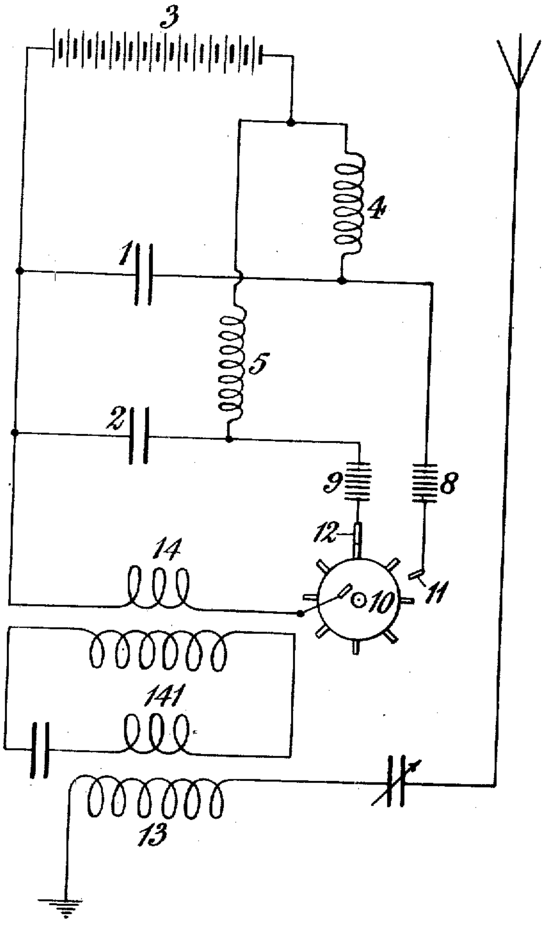

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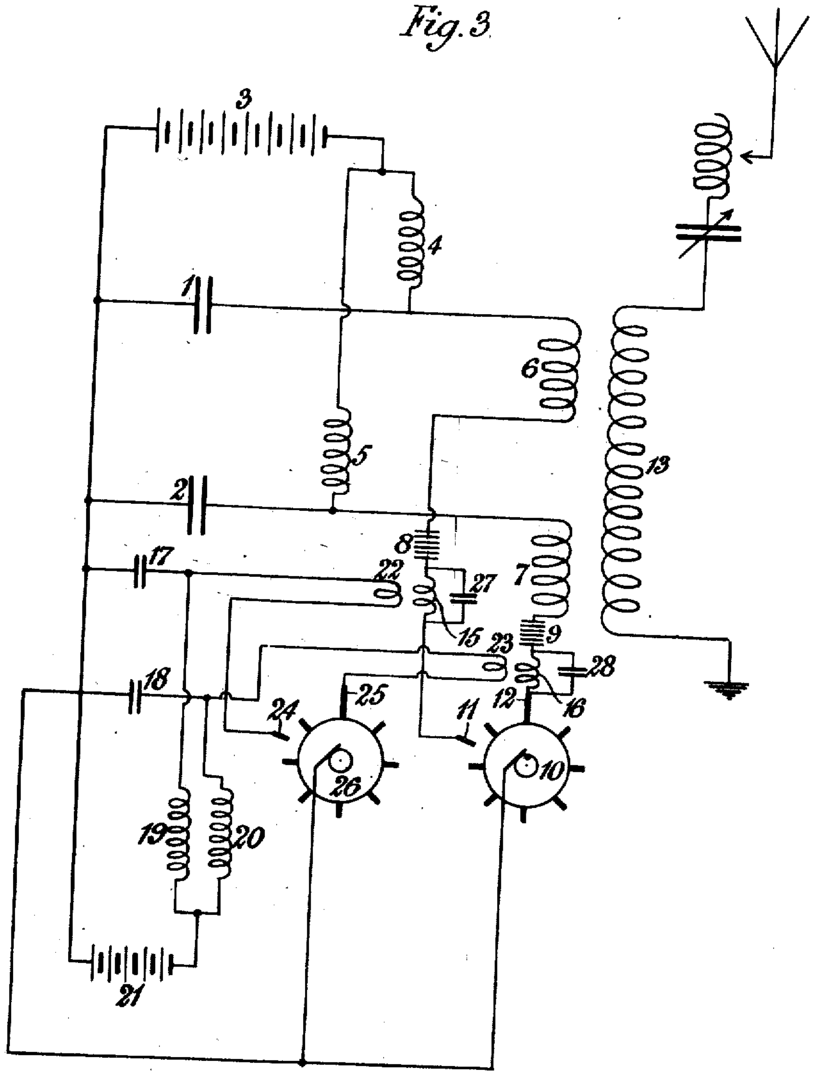
Fig. 3.



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UNITED STATES PATENT OFFICE.

GUGLIELMO MARCONI, OF LONDON, ENGLAND, ASSIGNOR TO MARCONI WIRELESS TELEGRAPH COMPANY OF AMERICA, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

WIRELESS-TELEGRAPH TRANSMITTER.

1,271,190. Specification of Letters Patent. Patented July 2, 1918.

Application filed April 30, 1914. Serial No. 835,345.

To all whom it may concern:

Be it known that I, GUGLIELMO MARCONI, a subject of the King of Italy, residing at Marconi House, Strand, London, England, have invented new and useful Improvements in Wireless-Telegraph Transmitters, of which the following is a specification.

The object of this invention is to provide an improved wireless telegraph transmitter in which it may be possible to put a very large amount of power into the aerial.

The invention is illustrated in the accompanying drawings, Figure 1 of which is a diagrammatic representation of a transmitter arranged in accordance with my invention, while Figs. 2 and 3 are similar views showing modifications.

1 and 2 are two condensers which are charged from the same source of current 3 through inductances 4 and 5 respectively. These condensers discharge through primary coils 6 and 7, quenching arrangements 8 and 9 and a disk discharger 10.

The electrodes 11 and 12 belonging to the condenser circuits 1, 6, 8 and 2, 7, 9 respectively are so arranged that discharges take place from 11 and 12 to the disk studs alternately at regular intervals and the interval between the commencement of the discharge of one condenser and the commencement of the discharge of the next condenser should be equal to or an exact multiple of the period of the aerial and intermediate closed circuit if any assuming that 6 and 7 are wound in the same way; if however they are wound in opposite ways, the interval should be equal to or an odd multiple of the half period. The primary coils 6 and 7 are coupled to a common secondary 13 which forms part of an aerial circuit.

The inductances 4, 5 should be large compared with the inductances of the other parts of the circuits, but should of course not be so large as to prevent the condensers being sufficiently charged in the time available.

Fig. 2 shows a modification in which a single inductance 14 through which both condensers discharge is employed, instead of the two separate inductances 6 and 7, and this inductance is not coupled directly to the aerial but to an intermediate oscillating circuit 141 which is itself coupled to the aerial.

Fig. 3 shows a modification in which each discharge circuit includes a spark gap which is of such a nature that the normal working potential will not spark but which is capable of being ionized by a second or trigger spark, which by reason of the shortness of its wave length and also because its circuit has little interaction with the other circuits gives more accurate timing than is possible with the dischargers in the main circuits.

The main condensers 1 and 2, which are charged from the high tension battery 3 or other source of supply through inductances 4 and 5, discharge through primary coils 6 and 7, quenching arrangements 8 and 9, the secondaries 15 and 16 of two small oscillation transformers and electrodes 11 and 12 respectively to the main disk 10.

The quenching arrangements and the adjustment of the electrodes 11 and 12 are such that the potential of the condensers 1 and 2 is not sufficient to cause a discharge between 11 and 12 and the disk 10.

Auxiliary or trigger condensers 17 and 18, which are small in comparison with 1 and 2, are charged through suitable inductances 19 and 20 from a high tension battery 21 or other source of supply. These condensers discharge through the primaries 22 and 23 of the small oscillation transformers, and electrodes 24 and 25 respectively to a trigger disk 26.

This trigger disk is preferably rigidly coupled to the main disk 10 and the electrodes are arranged so that when a stud on 10 is opposite 11 or 12 a stud on 26 is opposite 24 or 25 respectively. The main circuits 1, 6, 15 and 2, 7, 16 are both coupled and tuned to the aerial circuit.

The trigger circuits 17, 22 and 18, 23 have preferably a very much higher frequency than the main circuits; the secondaries 15 and 16 of the oscillation transformers are preferably shunted by small condensers 27, 28 placed across them and the circuits 15, 27 and 16, 28 are tuned to the trigger circuits 17, 22 and 18, 23 respectively.

Immediately either condenser 17 or 18 discharges a high potential is induced in the oscillation transformer secondary 15 or 16 causing a spark at 11 or 12 thus allowing the main condenser 1 or 2 to discharge.

Wherever the phrase "in synchronism with the aerial" is used in the following claims, I mean that the intervals between the condenser discharges are equal to or a multiple of the period of the portion of the transmitter circuits outside of the coupling members, such as 6, 7 or 14, through which the condenser discharges.

What I claim is:—

1. In a wireless telegraph transmitter, the combination of an aerial, a plurality of circuits each including a condenser and an inductance in series therewith, means separate from said inductances for charging each condenser through its inductance, and means including a quenched spark gap and a movable circuit-making and breaking device for discharging the condensers independently in succession and in synchronism with the aerial.

2. In a wireless telegraph transmitter, the combination of an aerial, a plurality of circuits each including a condenser and an inductance in series therewith, means separate from said inductances for charging each condenser through its inductance, and means including a quenched spark gap and a rotary disk discharger for discharging the condensers independently in succession and in synchronism with the aerial.

3. In a wireless telegraph transmitter, the combination of an aerial, a plurality of circuits each including a condenser and an inductance in series therewith, means separate from said inductances for charging each condenser through its inductance, and means including a circuit-making and breaking device common to a plurality of said circuits and a quenched spark gap for discharging the condensers independently in succession and in synchronism with the aerial.

4. In a wireless telegraph transmitter, the combination of an aerial, a plurality of circuits each including a condenser and an inductance in series therewith, means separate from said inductances for charging each condenser through its inductance, and means including a rotary disk discharger common to a plurality of said circuits and a quenched spark gap for discharging the condensers independently in succession and in synchronism with the aerial.

5. In a wireless telegraph transmitter, the combination of an aerial, a plurality of circuits each including a condenser and an inductance in series therewith, means separate from said inductances for charging each condenser through its inductance, means including a quenched spark gap and a movable circuit-making and breaking device for discharging the condenser independently in succession and in synchronism with the aerial, an inductance between each condenser and the circuit making and breaking device, and a winding in the aerial adapted to act as a common secondary to the primaries formed by the last-mentioned inductances.

6. In a wireless telegraph transmitter, the combination of an aerial, a plurality of condensers, an inductance in series with each condenser, means for charging each condenser independently through its inductance, a disk discharger, an inductance between each condenser and the discharger, and a winding in the aerial adapted to act as a common secondary to the primaries formed by the last mentioned inductances.

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Witnesses:
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